AMENDMENTS TO THE CLAIMS

1-25.   (Canceled)

26.   (New) A method comprising:

searching data for a first initial search result using at least a first portion of a first key; and

when the first initial search result is a route index corresponding to the first key, then returning the route index; and

when the first initial search result is a subtree index for an iterative search, then performing an iterative search comprising: searching the data for an iterative search result using a subsequent key comprising the subtree index found in a preceding search and at least a next portion of the first key; and when the iterative search result is a route index corresponding to the first key, then returning the route index; and when the iterative search result is a subtree index for a next search, then performing the iterative search again.

27.   (New) The method of claim 26 further comprising:

searching the data for a second initial search result using at least a first portion of a second key, wherein the step of searching the data for the second initial search result is performed substantially in parallel with the step of searching the data for the iterative search result.

28.   (New) The method of claim 27 wherein the first and/or second keys comprise at least one of either a 32 bit IPv4 address or a 128 bit IPv6 address.

29. (New) The method of claim 27 wherein the first and/or second keys further comprise a prefix corresponding to a Virtual Private Network identifier.

30. (New) The method of claim 26 wherein the data is stored in a lookup table.

31. (New) The method of claim 30 wherein the subtree index comprises a pointer to at least one other entry stored in the lookup table.

32. (New) An apparatus comprising:

a forwarding engine for searching data for a first initial search result using at least a first portion of a first key, wherein the forwarding engine is configured to return a route index when the first initial search result is a route index corresponding to the first key, and wherein the forwarding engine is configured to perform an iterative search when the first initial search result is a subtree index, wherein the iterative search comprises: searching the data for an iterative search result based on a subsequent key comprising the subtree index found in a preceding search and at least a next portion of the first key; and when the iterative search result is a route index corresponding to the first key, then returning the route index; and when the iterative search result is a subtree index, then performing the iterative search again.

33. (New) The apparatus of claim 32 further comprising:

a controller configured to enable parallel processing of at least (i) searching the data for a second initial search result using at least a first portion of a second key, and (ii) searching the data for an iterative search result based on a subsequent key comprising the subtree index found in a preceding search and at least a next portion of the first key.

34. (New) The apparatus of claim 33 wherein the first and/or second keys comprise at least one of either a 32 bit IPv4 address or a 128 bit IPv6 address.

35. (New) The apparatus of claim 33 wherein the first and/or second keys further comprise a prefix corresponding to a Virtual Private Network identifier.

36. (New) The apparatus of claim 33 wherein the data is stored in a lookup table.

37. (New) The apparatus of claim 36 wherein the subtree index comprises a pointer to at least one other entry stored in the lookup table.

38. (New) An apparatus comprising:

means for searching data for a first initial search result using at least a first portion of a first key, wherein said means is configured to return a route index when the first initial search result is a route index corresponding to the first key, and wherein said means is configured to perform an iterative search when the first initial search result is a subtree index, wherein the iterative search comprises: searching the data for an iterative search result based on a subsequent key comprising the subtree index found in a preceding search and at least a next portion of the first key; and when the iterative search result is a route index corresponding to the first key, then returning the route index; and when the iterative search result is a subtree index, then performing the iterative search again.

39. (New) The apparatus of claim 38 further comprising:

means for controlling the parallel processing of at least (i) searching the data for a second initial search result using at least a first portion of a second key, and (ii) searching the data for an

iterative search result based on a subsequent key comprising the subtree index found in a preceding search and at least a next portion of the first key.

40. (New) The apparatus of claim 39 wherein the first and/or second keys comprise at least one of either a 32 bit IPv4 address or a 128 bit IPv6 address.

41. (New) The apparatus of claim 39 wherein the first and/or second keys further comprise a prefix corresponding to a Virtual Private Network identifier.

42. (New) The apparatus of claim 38 further comprising a means for storing the data.

43. (New) The apparatus of claim 42 wherein the subtree index comprises a pointer to at least one other entry in the means for storing the data.

44. (New) A method comprising:

searching data for an iterative search result using a subtree index found in a preceding search and at least a next portion of a first key; and

when the iterative search result is a route index corresponding to the first key, then returning the route index; and

when the iterative search result is a subtree index for a next search, then performing said searching data for an iterative search result again.

45. (New) The method of claim 44 further comprising:

searching the data for a second initial search result using at least a first portion of a second key, wherein the step of searching the data for the second initial search result is

performed substantially in parallel with the step of searching the data for the iterative search result.

46. (New) The method of claim 45 wherein the first and/or second keys comprise at least one of either a 32 bit IPv4 address or a 128 bit IPv6 address.

47. (New) The method of claim 45 wherein the first and/or second keys further comprise a prefix corresponding to a Virtual Private Network identifier.

48. (New) The method of claim 44 wherein the data is stored in a lookup table

49. (New) The method of claim 48 wherein the subtree index comprises a pointer to at least one other entry stored in the lookup table.